DR-18

MOLECULAR COMPLEX OF SALICYLIC ACID WITH GLYCYRAM

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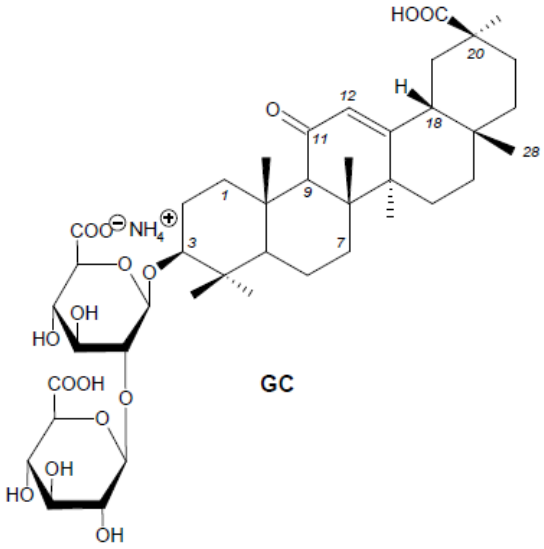
Abstract. Salicylic acid (SalA) is the simplest aromatic carboxylic acid, which had shown analgesic, antipyretic, and anti-inflammatory activity. SalA is one of the most famous dermatological drugs with keratolytic, bacteriostatic, fungicidal, and photoprotective properties[1].

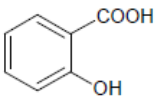
However, the use of SalA in medical practice is limited by its toxicity (salicylism)[1]. The great interest to molecular complexes of triterpene glycosides with different drugs is caused by the possibility to reduce of drugs doses, increase in bioavailability, decrease in drugs toxicity, and expansion of pharmacological activity spectrum of drugs and triterpene glycosides[2, 3]. The complexes of glycyrrhizic acid and its monoammonium salt (glycyram, GC) are the most studied[2, 3]. Molecular complex of SalA with GC is not described. The use of GC can potentially decrease in SalA toxicity and improve its bioavailability.

A new molecular complex of GC with SalA in a 1:1 molar ratio was obtained. The SalA–GC complex composition was determined by the method of isomolar series. Absorption spectrum of isomolar series for mixtures of GC with SalA has isosbestic points at 238 and 282 nm.

The molecular complexation of SalA with GC was studied by ATR FT-IR spectroscopy. It was shown that hydrogen bonds are formed between OH group of SalA carboxyl and C=O group of GC carboxyl or OH groups of GC carbohydrate residues: $–C{=}O_{GC}\cdots HOOC–_{SalA}$ and $–(H)O_{GC}\cdots HOOC–_{SalA}$. Hydrophobic contacts of GC with SalA molecules are possible.



GC



SalA

References

1. Madan R. K. A review of toxicity from topical salicylic acid preparations / R. K. Madan, J. Levitt // Journal of the American Academy of Dermatology. – 2014. – Vol. 70, Iss. 4. – P. 788–792.
2. Yakovishin L. A. Ivy and licorice triterpene glycosides: promising molecular containers for some drugs and biomolecules / L. A. Yakovishin, V. I. Grishkovets // Studies in Natural Products Chemistry. – 2018. – Vol. 55. – P. 351–383.
3. Tolstikova T. G. The complexes of drugs with carbohydrate-containing plant metabolites as pharmacologically promising agents / T. G. Tolstikova, M. V. Khvostov, A. O. Bryzgalov // Mini-Reviews in Medicinal Chemistry. – 2009. – Vol. 9, Iss. 11. – P. 1317–1328.